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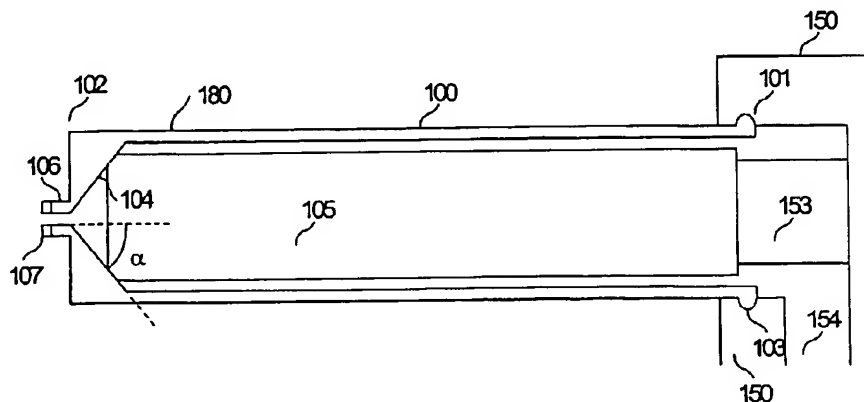
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**Declarations under Rule 4.17:**

— as to applicant's entitlement to apply for and be granted  
a patent (Rule 4.17(ii)) for the following designations AE,  
AG, AI, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,

[Continued on next page]

(54) Title: **TUBE WITH SELF-CLOSING MECHANISM FOR LIQUID CONTAINER**



(57) Abstract: The invention relates to a tube for application for a container with a built-in pump, in which the tube possesses an internal cross section of an inside for flow of liquid, an external cross section of the tube, which is larger than the internal cross section, a first end with a first opening for intake of the liquid, and where the first end encompasses fastening means for fastening of the tube on the container and another end with an opening part encompassing another opening for discharge of the liquid. The other end additionally encompasses a barrier part, where the barrier part edges towards the opening parts, so that it blocks for the other opening. At least the barrier part of the opening part is made from an elastic material, so that the liquid can be pressed out through the other mentioned opening passing the barrier part after a deformation of at least the barrier part or the opening part. In this way a closing mechanism is obtained, which prevents contamination with microorganisms and prevents impurities from penetrating into the tube of the container. The closing mechanism may be manufactured economically. Besides the opportunity is obtained for adjusting the velocity of the pumped out liquid as well as for pumping out the liquid in the form of a drop, each time the pump is activated.

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— of inventorship (Rule 4.17(iv)) for US only

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

## INTERNATIONAL SEARCH REPORT

International application No

PCT/DK 03/00241

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 A61J1/14

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 302 101 B1 (PY DANIEL) 16 October 2001 (2001-10-16) abstract; figures 9,10 ---	1-10
A	US 4 317 448 A (SMITH PHILIP E) 2 March 1982 (1982-03-02) abstract; figure 6 ---	1-10
A	WO 02 22458 A (NIHON TENGANYAKU KENKYUSYO CO ;HAMAMOTO KEIJI (JP); TAISEI KAKO CO) 21 March 2002 (2002-03-21) abstract ---	1-10
A	WO 01 82696 A (NAJI MOHAMMED ;PAGES BERNARD (FR); CHAUVIN LAB SA (FR); LACOMBE JA) 8 November 2001 (2001-11-08) abstract; figures 1,2 -----	1-10

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents :

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"P" document published prior to the international filing date but later than the priority date claimed

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"A" document member of the same patent family

Date of the actual completion of the international search

20 January 2004

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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/DK 03/00241

## Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 11, 12  
because they relate to subject matter not required to be searched by this Authority, namely:  
See PCT Rule 39.1(iv): Methods for treatment of the human or animal body by surgery or therapy, as well as diagnostic methods.
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.

PCT/DK 03/00241

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6302101	B1	16-10-2001	AU 2084401 A 25-06-2001 CA 2394559 A1 21-06-2001 EP 1237607 A2 11-09-2002 JP 2003516818 T 20-05-2003 WO 0143794 A2 21-06-2001 US 2002017294 A1 14-02-2002
US 4317448	A	02-03-1982	US 4230112 A 28-10-1980 US 4303071 A 01-12-1981
WO 0222458	A	21-03-2002	JP 2002080055 A 19-03-2002 EP 1319606 A1 18-06-2003 WO 0222458 A1 21-03-2002 US 2002153386 A1 24-10-2002
WO 0182696	A	08-11-2001	FR 2808199 A1 02-11-2001 AU 5642101 A 12-11-2001 CA 2407085 A1 08-11-2001 CN 1426275 T 25-06-2003 EP 1276374 A1 22-01-2003 WO 0182696 A1 08-11-2001 US 2003159983 A1 28-08-2003